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ABSTRACT

If the purpose of industry is the good of society or of the planet as a whole, then how does higher education meet the needs of industry, particularly in the United Kingdom? Industry needs a trained work force of high quality recruits who are both educated and morally and environmentally aware. However, in the current debate over moral training, there is no consensus as traditional Christian morality is regarded as too idealistic and impractical and the promises of the "capitalistic" ethic have not been fulfilled for the bulk of society. Higher education's role in helping capitalism and furthering the good of both society at large and the planet may involve introducing ethical dimensions into degree programs, particular in science, technology and business affairs. From a material scientist's point of view graduates of science and technology programs must understand that technical change is the outcome of social, cultural and political factors. From the educator's point of view current educational policy includes school-industry collaboration and points up the need for students to understand the moral values under wealth creation and entrepreneurship. (Contains 16 references.) (JB)

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1. INDUSTRY AND SOCIETY

Industry, by which in this paper we mean Western industrial capitalism, plays so central a role in the modern world that there is a danger of forgetting that industrial enterprise should perhaps be seen as a means, not an end in itself. Thus it could be said that it has no purpose except in so far as it serves some end external to itself. This 'end' has been perceived by different groups in very different ways. In this paper we will take as our premise that the purpose of industry is to serve the 'good' of society as a whole, which in the 1990's must be taken to imply the good of the planet as a whole.

2. HOW DOES INDUSTRY PERCEIVE ITS NEEDS?

(i) In the context of educational debate, it is commonplace for industry to express its needs in terms of a trained workforce. Peter Morgan, Director General of the Institute of Directors has spoken in general terms of industry being starved of 'high quality recruits' and 'up to date expertise' (Morgan 1990 a). In many subject areas the general term 'skilled recruits' has been brought into sharp focus. The Institute of Physics recently asked UK industrialists about their perceived demand for physics graduates over the next five years, and about the specialisations they wanted (Davies and Davies 1989). Twenty-five different specialist areas were mentioned, and in many of these, the demand far exceeded the numbers expected to graduate.

(ii) The 1980's saw a number of spectacular cases of business fraud and the rise in the public consciousness of environmental problems. It is perhaps in response to these developments that industry has been talking more and more loudly in recent years about an other kind of 'need' - the need 'to show that the conduct of business is basically a moral matter' and to 'come to terms with issues of social responsibility' (Morgan 1990 b). Peter Meyer-Dohm sees the need for greater 'environmental

awareness' as one of five major challenges facing industry on the 1990's (Meyer-Dohm 1990). The CBI's new quarterly environmental newsletter is further witness to the recognition by industry of its need in this area.

One response of industry and commerce to these developments is the rise of 'ethical' investments trusts and of companies which make a policy of appealing to consumers whose perceptions of ethical and environmental issues are acute. One unit trust aimed at this market seeks investment 'world-wide in companies that are either directly engaged in pollution control or which demonstrate a positive commitment to the long term protection and wise use of the natural environment' (Merlin 1988).

Such overtly 'ethical' enterprises are still at the periphery of the commercial scene. Nevertheless it is interesting to examine statements made by the Council for Industry and Higher Education, a group which could be said to represent the main stream of British industry. In its recent paper 'The Humanities and the Working World' (CIHE 1990) some very liberal statements are made which contrast strongly with much of the simplistically utilitarian writing on the subject of what industry 'needs' from higher education. For example, it praises 'the scholarly pursuit of the humane disciplines' as not only proper, but 'vital to the thriving and prosperous society we look for'.

It also recognises the point that 'industry and commerce play a role in forming and expressing the moral values of the time'. Although it is introduced as if it were an unfamiliar concept, we would contend that given its centrality in our society it is inevitable that industry plays such a role. The real question is '*What are the moral values that it helps to form and to express*?' The CIHE paper gives little explicit guidance here, except for an apparent endorsement of 'positively predatory' competition.

In a pluralistic society like Britain today there is no moral consensus. This fact presents a problem for the 'enterprise culture' which looks to Adam Smith for its theoretical rationale, and even moral justification, forgetting that Adam Smith put forward his ideas in late 18th Century Scotland, a society with a shared ethical

framework. In late 20th Century Britain the Christian moral standpoint remains an influential one in the field of business ethics, and may become more so as a result of the work of Fr. Jack Mahoney at King's College, London and of the Institute of Business Ethics. Nevertheless, the 'common sense' view is that Christian morality is too 'idealistic and impractical' (McHugh and Askonas 1990) for the world of business and that the job for industry is to create as much wealth as possible in the hope that there will be a 'trickle down' effect into society as a whole. Many would say that this hope has not been fulfilled.

3. WHAT CAN HIGHER EDUCATION DO?

If the 'needs of industry' include the wider dimension of serving the 'good of society and of the whole planet', it must follow that industry needs from higher education not just 'high quality recruits' with various types of technical expertise, but high quality recruits who recognise the moral questions facing society and have some experience in addressing them. The technical competence and moral sensitivity should be united in the same individual. This means introducing ethical dimensions into its degree schemes, especially those in science, technology and business studies. In this section of the paper we suggest some of the moral issues which might be addressed by students, and then look at the implications of such an approach for two university teachers, one a materials scientists, the other a teacher educator.

(i) Moral issues

(a) The whole complex concept of 'growth' and 'development' is extremely controversial. Many companies seem to act as if the priority of unrestrained growth was axiomatic, yet 'sustainable' industrial development was urged in the Bruntland Report (Bruntland 1987; see also Pearce *et al.* 1990 a and b). What about 'zero growth' which was forcefully argued in the 1970's and is now being advocated again? (Daly 1987; Irvine 1990)

(b) Is it morally acceptable to stimulate a market for a product irrespective of whether it is socially useful and environmentally 'sound'?

(c) In our capitalist society we may smile at the medieval concept of the sin of usury, but is there no moral question to be addressed in the high pressure 'selling' of loans with the consequent debt crisis both domestic and international?

(d) In the post-Fordist scenario what new relationships will emerge between workers and employers? What should be the balance of benefit from new technology between the workers and the company profits? (Hayes 1989; Council for Science and Society 1981)

(ii) A materials scientist's viewpoint

The idea that 'ethical sensitivity and moral judgement' should be among the 'skills' of the graduate technologist may sound novel. It should be remembered that the concept of 'professional' has always carried implications, not only of technical competence, but also of ethical responsibility which extends beyond the immediate interests of the employer to society at large. We are arguing that this ethical responsibility must be interpreted more broadly than it has been in the past, because of the new challenges which face contemporary society.

Many of our science and technology graduates will form the future senior staff of industry. It is our contention that to serve industry well we should endeavour to show them that technical change is the outcome of social, cultural and political factors, not just of technological development. There is no inevitability that technology will progress, certainly not in a predetermined direction. Where technological choices have to be made, financial and engineering criteria will rarely be sufficient: there will usually be social and ethical considerations, and sometimes these will predominate.

Scientific evidence will often play a part in the decisions made in industry and commerce. While it may be important that our technology graduates have the knowledge to question this on a scientific level, it is essential that they should be familiar with the widely held view that scientific statements are always open to question, that is they are 'inherently defeasible' (Collins and Shapin 1989).

(iii) A teacher educator's viewpoint

Since James Callaghan's Ruskin speech of 1976 the 'needs of industry' have become central to the task of educating children. Collaboration between schools and industry has increased dramatically, largely as a result of Government initiatives. The National Curriculum includes a 'cross curricular theme' entitled 'Education for Economic and Industrial Understanding' which is designed to permeate the whole curriculum. In teacher Education the Government funded project 'Enterprise Awareness in Teacher Education' (EATE) aims to 'incorporate enterprise, economic and industrial awareness into all teacher training courses'.

Will these developments serve the 'needs of industry'? What kind of awareness are they promoting in schools and teacher education institutions? The moral dimension appears to be lacking in the plentiful documentation that accompany these schemes. The emphasis is on the need to understand enterprise and wealth creation and to develop entrepreneurial skills. In our view it is important that students explore the values and moral positions that underlie wealth creation and entrepreneurialism and should be encouraged to see their role in the classroom as ultimately a moral one.

4. CONCLUSION

Although there is active debate about what skills are appropriate, most would agree that higher education should provide skilled people for industry and commerce. However universities and polytechnics are not likely to serve society well if their graduates are no more than technically qualified: society badly needs those whose 'spiritual, moral and cultural' development (Education Reform Act 1988) has been in parallel with their intellectual growth. We would expect industry to endorse this conclusion unless its new interest in 'green' issues and the holistic movement is insincere, and nothing more than a cynical move aimed at gullible customers and at recruiting more humanities graduates especially women.

Higher education has a duty to industry and to the public at large. This duty is not only to provide well educated and qualified recruits, but to have the courage to

raise with its industrial partners the profound questions that relate to the future well-being of our society.

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